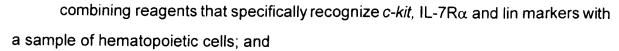
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## WHAT IS CLAIMED IS:

- A substantially pure composition of mammalian common lymphoid progenitor cells, wherein at least 95% of the cells in said composition are characterized as *c-kit*<sup>o</sup>, IL-7Rα<sup>+</sup>, lin; and wherein said progenitor cells are capable of giving rise to T cells, B cells and natural killer cells.
  - 2. A composition of mammalian common lymphoid progenitor cells according to Claim 1, wherein said cells are blast cells.
- 3. A composition of mammalian common lymphoid progenitor cells according to Claim 1, wherein said cells are further characterized as Thy-1.
  - 4. A composition of mammalian common lymphoid progenitor cells according to Claim 1, wherein said cells are mouse cells, and are further characterized as Sca-1<sup>lo</sup>.
  - 5. A composition of mammalian common lymphoid progenitor cells according to Claim 1, wherein said cells are further characterized as CD43<sup>lo</sup>, HSA<sup>lo</sup>, CD45<sup>+</sup> and MEL-14.
  - 6. A composition of mammalian common lymphoid progenitor cells according to Claim 1, wherein said cells are genetically modified to comprise an exogenous DNA vector.
- 7. A method of enrichment for a composition of mammalian common lymphoid progenitor cells, wherein at least 95% of the cells in said composition are characterized as *c-kit*<sup>to</sup>, IL-7Rα<sup>+</sup>, lin<sup>-</sup>; and wherein said progenitor cells are capable of giving rise to T cells, B cells and natural killer cells, the method comprising:



selecting for those cells that are c- $kit^{lo}$ , IL- $7R\alpha^+$ ,  $lin^-$ , to provide an enriched population of cells having lymphoid lineage progenitor activity.

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- 8. A method according to Claim 7, wherein said sample of hematopoietic cells is bone marrow.
- 9. A method according to Claim 7, wherein said sample of hematopoietic10 cells is mobilized peripheral blood.
  - 10. A method according to Claim 7, further comprising the step of selecting by size for blast cells.
- 15 11. A method according to Claim 7, wherein said cells are mouse cells, and further comprising the steps of:

combining reagents that specifically recognize Sca-1 with said sample of hematopoietic cells; and

selecting for those cells that are Sca-1<sup>lo</sup>.

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12. A method of genetically modifying mammalian common lymphoid progenitor cells, the method comprising:

combining reagents that specifically recognize c-kit, IL- $7R\alpha$  and lin markers with a sample of hematopoietic cells; and

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selecting for these certs that are c- $kit^{lo}$ , IL- $7R\alpha^+$ ,  $lin^-$ , to provide an enriched population of cells having lymphoid lineage progenitor activity;

transducing said enriched population of cells with an exogenous DNA to provide a population of genetically modified mammalian common lymphoid progenitor cells.

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- 13. A method according to Claim 12, wherein said sample of hematopoietic cells is bone marrow.
- 5 14. A method according to Claim 12, wherein said sample of hematopoietic cells is mobilized peripheral blood.
  - 15. A method according to Claim 12, wherein said exogenous DNA is a retroviral-based vector comprising a mammalian gene.
  - 16. A method of transplanting lymphoid lineage progenitor cell activity into a mammalian recipient, the method comprising:

transplanting a substantially pure composition of mammalian common lymphoid progenitor cells, wherein at least 95% of the cells in said composition are characterized as expressing c- $kit_{a}^{p}$ )L- $7R\alpha^{+}$ , lin, into said recipient;

wherein sala mammalian common lymphoid progenitor cells give rise to T cells, B cells and natural killer cells.

17. A method of *in vitro* culture for hematopoietic cells, the method 20 comprising:

introducing a population of cells according to Claim 1 into a culture medium comprising c-kit ligand; and

maintaining said culture in vitro for at least about 7 days.

25 18. A method according to Claim 17, wherein said culture medium further comprises methylcellulose and interleukin 7, and wherein said CLP differentiate into B lineage cells.